

IN THE CLAIMS:

1. (canceled)
2. (one time amended) A method for determining a ~~value~~ best match shade of a shade guide system having a plurality of shades that is a closest match to the shade of for an object being measured, comprising the steps of:
  - measuring ~~the~~ optical properties of the object with an instrument;
  - calculating a plurality of ~~color~~ optical property parameters based on the measurement of the object;
  - calculating a table of hits based on whether the ~~color~~ optical property parameters satisfy predetermined conditions for each of the plurality of shades of the shade guide system, wherein at least certain of the predetermined conditions comprise a “must match” condition;
  - determining via the table of hits whether one or more shades ~~in the table of hits~~ satisfies all ~~corresponding~~ “must match” conditions;
  - if no shades satisfy all ~~corresponding~~ “must match” conditions then reporting a failure;
  - and
  - if multiple shades satisfy all corresponding “must match” conditions then assessing additional conditions to determine a shade to report as the best match shade.
3. (one time amended) A method for determining optical characteristics of an object, comprising the steps of:
  - measuring optical characteristics of the object with an instrument, wherein the instrument comprises a color measuring assembly receiving light from a plurality of light source/light receiver pairs, wherein the color measuring assembly generates data of a first average optical depth based on light received by a first light source/light receiver pair and generates data of a second average optical depth based on light received by a second light source/light receiver pair, wherein the second average optical depth is different from the first average optical depth;
  - determining a closest match to predetermined shade values in a plurality of shade guide systems;
  - concurrently displaying the closest determined match in the plurality of shade guide systems; and

displaying an indication of which of the concurrently displayed closest determined match in the plurality of shade guide systems is a best match.

4. (one time amended) A method for determining visual acceptance of a restoration, comprising the steps of:

storing data indicative of ~~color~~ optical characteristics of a plurality of shade guide values;  
measuring optical characteristics of an object to which the restoration is to be a visual shade match;

determining a prescribed shade guide value for the restoration based on the ~~measuring~~ measured optical characteristics;

fabricating the restoration based on the prescribed shade guide value, wherein constituent materials for the restoration are determined based on the prescribed shade guide value ~~values~~;

entering or accessing the ~~determined~~ prescribed shade guide value for the restoration;  
measuring optical characteristics of the restoration; and

providing a predictive indicator of the visual acceptability of the restoration as compared to the object based on the entered or accessed, ~~determined~~ prescribed shade guide value and data from the measurement of the optical characteristics of the restoration.

5. (new) The method of claim 2, wherein, if only one shade satisfies all “must match” conditions, then reporting that one shade as the best match shade.

6. (new) The method of claim 2, wherein the optical property parameters comprise color tristimulus values.

7. (new) The method of claim 2, wherein the optical property parameters comprise L, a and b values.

8. (new) The method of claim 2, wherein the optical property parameters comprise an integral intensity of a calculated spectrum.

9. (new) The method of claim 2, wherein the optical property parameters comprise three values representing color information for the object and an integral intensity of a calculated spectrum.

10. (new) The method of claim 2, wherein the optical property parameters comprise three values representing color information for the object and a degree of curvature of a calculated spectrum.

11. (new) The method of claim 2, wherein one of the additional conditions comprises a summation of differences between a plurality of optical property parameters and preferred parameters for a plurality of shades.

12. (new) The method of claim 3, wherein a plurality of measurements are made in a plurality of regions of the object, wherein a display is made of an indication of which of the concurrently displayed closest determined match in the plurality of shade guide systems is a best match for each of the plurality of regions of the object.

13. (new) The method of claim 3, wherein, user input controls a display of additional color information based on the measurement of the object.

14. (new) A method for determining optical characteristics of an object, comprising the steps of:

measuring optical characteristics of the object with an instrument, wherein the instrument comprises a color measuring assembly receiving light from a plurality of light source/light receiver pairs, wherein the color measuring assembly generates data via a first light source/light receiver pair of a first sensitivity based on a thickness of a material of the dental object and generates data via a second light source/light receiver pair of a second sensitivity based on a thickness of a material of the dental object, wherein the second sensitivity is different from the first sensitivity;

determining a closest match to predetermined shade values in a plurality of shade guide systems;

concurrently displaying the closest determined match in the plurality of shade guide systems; and

displaying an indication of which of the concurrently displayed closest determined match in the plurality of shade guide systems is a best match.

15. (new) The method of claim 14, wherein a plurality of measurements are made in a plurality of regions of the object, wherein a display is made of an indication of which of the concurrently displayed closest determined match in the plurality of shade guide systems is a best match for each of the plurality of regions of the object.

16. (new) The method of claim 14, wherein, user input controls a display of additional color information based on the measurement of the object.

17. (new) The method of claim 4, further comprising the steps of receiving user input, and, based on the user input, displaying information indicative of a difference of a color parameter for the prescribed shade guide value as compared to the measured restoration.

18. (new) The method of claim 17, wherein information is displayed indicative of a difference in value for the prescribed shade guide value as compared to the measured restoration.

19. (new) The method of claim 18, wherein information is displayed indicative of differences in value and chroma for the prescribed shade guide value as compared to the measured restoration.

20. (new) The method of claim 18, wherein information is displayed indicative of differences in value, chroma and hue for the prescribed shade guide value as compared to the measured restoration.